

## PATENT COOPERATION TREATY

REC'D 22 OCT 2004

## PCT

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PSOD001WO	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/06526	International filing date (day/month/year) 20.06.2003	Priority date (day/month/year) 18.07.2002
International Patent Classification (IPC) or both national classification and IPC F17C13/04		
Applicant SODA-CLUB (CO2) SA et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 7 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 7 sheets.

3. This report contains indications relating to the following items:

- I  Basis of the opinion
- II  Priority
- III  Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV  Lack of unity of invention
- V  Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI  Certain documents cited
- VII  Certain defects in the international application
- VIII  Certain observations on the international application

Date of submission of the demand 19.11.2003	Date of completion of this report 21.10.2004
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Nicol, B Telephone No. +49 89 2399-8188



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EXAMINATION REPORT

International application No. PCT/EP 03/06526

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-37 as originally filed

**Claims, Numbers**

1-23 received on 20.02.2004 with letter of 18.02.2004

**Drawings, Sheets**

1/8-8/8 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:
- the drawings, sheets:

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5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	1-16,18-23
	No: Claims	17
Inventive step (IS)	Yes: Claims	1-16,19-23
	No: Claims	17,18
Industrial applicability (IA)	Yes: Claims	1-23
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

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The following documents are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1: EP-A-0 161 348

D2: DE 84 02 594 U

D3: FR-A-1 116 274

**Re Item V**

The examiner has duly taken the arguments of the applicant, however, the opinion of the examiner is the following:

**CLAIMS 1-10**

Document D1 (EP 0161348), which is considered to represent the most relevant state of the art, discloses a valve according to claim 1 but from which the subject-matter of claim 1 differs in that the valve member is separate from the closing member. **Therefore, the subject-matter of independent claim 1 is new in the sense of Article 33(2) PCT.**

The invention aims to provide an alternative valve assembly.

The features concerning the mutual arrangement of claim 1 result from a step being non-obvious in view of the cited prior art documents, in which no incentive is given to provide this specific structure and arrangement. Thus, the subject-matter of present independent claim 1 is novel and inventive and the **subject-matter of independent claim 1 also meets the requirements of Article 33(3) PCT.**

**The subject-matter of dependent claims 2-10 is also new and does also involve an inventive activity, since these claims are disclosing further developments of the valve defined by claim 1.**

**CLAIMS 17-18**

Although claims 1 and 17 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought and in respect of the terminology used for the features of that subject-matter. The aforementioned claims therefore lack conciseness. Indeed, claim 17 deals with a refillable container provided with a valve, and claim 1 deals with a valve. Claim 17 should be dependent of claim 1. Further, for a better understanding of the invention, the valve should be the same as in claim 1. **Hence, claim 17 does not meet the requirements of Article 6 PCT.**

**The subject-matter of claim 17 is not new in the sense of Article 33(1) and (2) PCT,** because document D1 (see P. 1, lines 4-14) disclose in accordance with claim 17 a refillable container for storing fluids (P.1, lines 4-14), wherein said container is provided with a valve (1), said valve (1) comprising a housing (2) with an inlet port (3) and an outlet port (4) wherein said inlet port (3) is adapted for direct or indirect connection to a fluid source and wherein said outlet port (4) is adapted for direct or indirect connection to said container, a closing member (14), and at least one valve member (14) which in a first position allows fluid communication between said inlet port (3) and said outlet port (4) and which, in a second position, prevents fluid communication from said inlet port (3) to said outlet port (4), wherein said valve member is brought into and maintained in said first position only if a static pressure difference across said valve member (14) is below a pre-determinable first threshold.

**The subject-matter of claim 17 is also not new in the sense of Article 33(1) and (2) PCT,** by considering document D2 (see P. 4, § 3).

**The subject-matter of claim 18 does not involve an inventive step in the sense of Article 33(3) PCT,** because D2 which discloses the same valve as D1 discloses a container wherein the valve is permanently connected to an opening of said container. Therefore, it is obvious for the skilled person to connect permanently this valve to an opening of a container.

### **CLAIMS 19-23**

Document D1 (EP 0161348), which is considered to represent the most relevant state of the art, discloses a valve arrangement as used in the method according to claim 19 but from which the subject-matter of claim 19 differs in that it discloses a method for filling a container, in which the delivery pressure of the fluid at the inlet port of the valve is controlled such as to maintain the static pressure difference across a valve member below a predetermined or predeterminable first threshold. The valve in D1 is a safety valve arranged on a container to discharge, and D1 does not disclose as such, a method for filling a container, having such a valve. **Therefore, the subject-matter of independent claim 19 is new in the sense of Article 33(2) PCT.**

Methods for filling container as known in the prior art, but all known methods do not disclose a valve such as in claim 19 for achieving the filling of a container.

The invention aims to provide a method step of controlling the delivery pressure of the fluid

at the inlet port, such as to maintain the static pressure difference across a valve member below a predetermined threshold.

The method step is non-obvious in view of the cited prior art documents, in which no incentive is given to provide this specific method step. Thus, the subject-matter of present independent claim 19 is novel and inventive and **the subject-matter of independent claim 19 also meets the requirements of Article 33(3) PCT.**

**The subject-matter of dependent claims 20-23 is also new and does also involve an inventive activity**, since these claims are disclosing further method steps of the method defined by claim 19.

#### **CLAIMS 11-16**

**The subject-matter of claim 11 is not clear in the sense of Article 6 PCT**, because claim 11 deals with a system suitable for filling a container, and wherein the container is not part of the subject-matter claimed. Thus, all features relating to the container are not part of the subject-matter claimed and are not considered for the examination of the system. The container is an essential feature for the definition of the invention. Since independent claim 11 does not contain this feature it does not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.

**The subject-matter of claim 11 also meets the requirements of Article 33(1) PCT**, since this claim is a system claim, corresponding to method claim 19.

**The subject-matter of dependent claims 12-16 does also meet the requirements of Article 33 (1) PCT.**

**Thus, the present application does not meet the requirements of Article 33(1) PCT.**

#### **Comments:**

To meet the requirements of Rule 27(1)(b) EPC, the documents D1, D2, and D3 should be identified in the description and the relevant background art disclosed therein should be briefly discussed.

**The units expressed on page 32 do not meet the requirements of Rule 35(12) EPC**

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and should be replaced by the appropriate SI units (cf. the Guidelines, C-II, Annex 1). The present expressions should, however, be retained in parentheses after the replacement expressions.

**Claims, amended**

1. A valve (10) for closing a container (500) and for enabling the container (500) to be filled, said valve (10) comprising a housing (20) with an inlet port (30) and an outlet port (40) wherein said inlet port (30) is adapted for direct or indirect connection to a fluid source (700) and wherein said outlet port (40) is adapted for direct or indirect connection to said container (500);  
a closing member (60; 260; 360; 460);  
and at least one valve member (70; 270; 370; 470) which in a first position allows fluid communication between said inlet port (30) and said outlet port (40) and which, in a second position, prevents fluid communication from said inlet port (30) to said outlet port (40),  
wherein said valve member (70; 270; 370; 470) is separate from the closing member (60; 260; 360; 460) and is brought into and maintained in said first position only if a static pressure difference ( $\Delta P_3$ ) across said valve member (70; 270; 370; 470) is below a pre-determinable first threshold.
2. A valve according to claim 1, wherein said valve member (70; 270; 370; 470) has force-generating means (80; 280; 380'', 80''; 480'', 80') adapted for providing a balancing force ( $F_x$ ) to said valve member (70; 270; 370; 470) and for bringing said valve member (70; 270; 370; 470) into said first position when said filling condition is fulfilled.
3. A valve according to claim 2, wherein said force-generating means have a spring (280).
4. A valve according to one of the claims 1 to 2, wherein the valve member (370; 470) has an internal part (380'', 480'') comprised in said valve which can be operatively connected

with an external part (80; 380'; 480') not comprised in said valve (10) for bringing and maintaining said valve member (370; 470) into said first position.

5. A valve according to claim 4, wherein said internal part (380''; 480'') has a first magnet (381) or a magnetisable element (481) providing a balancing force (Fx) for bringing said valve member (370; 470) into said first position when said valve is brought into proximity with an external part (380'; 480') having a second magnet (382; 482).
6. A valve according to one of the claims 1 to 5, wherein said closing member (60; 260; 360; 460) is formed as a check valve.
7. A valve according to claim 6, wherein said check valve (260) and said valve member (270) are formed on a body (260) movable in a chamber (50) of said housing (20) between said inlet port (30) and said outlet port (40).
8. A valve according to one of the claims 6 or 7, wherein said check valve (260) comprises a pin (290) attached to an end of said check valve (260) directed towards said inlet port (30).
9. A valve according to one of the claims 7 to 8, wherein said housing has a chamber divided in to an upstream chamber (251) and a downstream chamber (352) in communication with one another, wherein said upstream chamber (351) is adapted for reciprocatingly accommodating said closing member (60) wherein said downstream chamber (352) is adapted for reciprocatingly accommodating said valve member (370) at least between said first and second position.

10. A valve according to one of the claims 5 and 9, wherein said downstream chamber (352) is adapted for aligning movement of said valve member (370) in the direction of magnetic attraction or repulsion between an internal part (380''; 480'') and an external part (380'; 480').

11. A system for filling a container (500) with a fluid exclusively from an authorised fluid source (700), comprising a pressure regulating means (720) in fluid communication to said fluid source (700) and adapted for connection with a valve (10) on said container (500), said valve (10) comprising

- a housing (20) with an inlet port (30) and an outlet port (40) wherein said inlet port (30) is adapted for direct or indirect connection to a fluid source (700) and wherein said outlet port (40) is adapted for direct or indirect connection to said container (500);
- a closing member (60; 260; 360; 460);
- and at least one valve member (70; 270; 370; 470) which in a first position allows fluid communication between said inlet port (30) and said outlet port (40) and which, in a second position, prevents fluid communication from said inlet port (30) to said outlet port (40),
- wherein said valve member is brought into and maintained in said first position only if a static pressure difference ( $\Delta P_3$ ) across said valve member (70; 270; 370; 470) is below a pre-determinable first threshold; wherein said pressure regulating means (720) is designed to maintain the pressure of the fluid supplied to said container (500) below a pre-determined or pre-determinable first threshold selected in such a way that said valve member (70; 270; 370; 470) of said valve (10) is brought into and maintained in said first position.

12. A system according to claim 11, wherein said system has fluid flow rate sensing means (730) for measuring the flow of liquid into said container (500), said system further comprising control means (710) operatively connected to said pressure regulating means (720) and said fluid flow rate sensor means (730).
13. A system according to claim 11 or 12, wherein said pressure regulating means (720) is adapted for providing a delivery pressure of a pre-determined minimum magnitude and for increasing the delivery pressure in a manner controllable via said control means (710).
14. A system according to one of the claims 11 to 13, wherein during operation of the system relating to the filling of a container (500) from a fluid source (699) connected to that system, said control means initially commands the pressure regulation means to provide a delivery pressure of a magnitude below a first predetermined threshold value and then to increase the delivery pressure, maintaining the fluid flow rate within a pre-determined range.
15. A system according to one of the claims 11 to 14, wherein the system further comprises an external part (380'; 480') of said force-generating means which can be brought in operative connection with an internal part (380''; 480'') of a force-generating means in a valve according to one of the claims 4 to 10.
16. A system according to one of the claims 11 to 15, wherein the system comprises means for weighing (770) said container (500) coupled to said control means (710).

17. A refillable container for storing fluids, wherein said container is provided with a valve, said valve (10) comprising
  - a housing (20) with an inlet port (30) and an outlet port (40) wherein said inlet port (30) is adapted for direct or indirect connection to a fluid source (700) and wherein said outlet port (40) is adapted for direct or indirect connection to said container (500);
  - a closing member (60; 260; 360; 460);
  - and at least one valve member (70; 270; 370; 470) which in a first position allows fluid communication between said inlet port (30) and said outlet port (40) and which, in a second position, prevents fluid communication from said inlet port (30) to said outlet port (40), wherein said valve member is brought into and maintained in said first position only if a static pressure difference ( $\Delta P_3$ ) across said valve member (70; 270; 370; 470) is below a pre-determinable first threshold.
18. A container according to claim 17, wherein the valve is permanently connected to an opening of said container (500).
19. A method for filling a container (500) having a valve (10) with a fluid from a fluid source (600), said valve (10) comprising
  - a housing (20) with an inlet port (30) and an outlet port (40) wherein said inlet port (30) is adapted for direct or indirect connection to a fluid source (700) and wherein said outlet port (40) is adapted for direct or indirect connection to said container (500);
  - a closing member (60; 260; 360; 460);
  - and at least one valve member (70; 270; 370; 470) which in a first position allows fluid communication between said inlet port (30) and said outlet port (40) and which,

in a second position, prevents fluid communication from said inlet port (30) to said outlet port (40), wherein said valve member is brought into and maintained in said first position only if a static pressure difference ( $\Delta P_3$ ) across said valve member (70; 270; 370; 470) is below a pre-determinable first threshold; the method comprising the steps of:

- a) connecting the valve (10) to said fluid source (600)
- b) controlling the delivery pressure ( $P_1$ ) of said fluid at an inlet port (30) of said valve (10) such as to maintain the static pressure difference ( $\Delta P_3$ ) across a valve member (70; 270; 370; 470) of said valve below a predetermined or predeterminable first threshold.

20. A method according to claim 19, wherein step b) comprises the sub-steps of

- b1) initially providing a static delivery pressure to said inlet port (30) of said valve (10) that is less than a predetermined second threshold during a pre-determined or predeterminable period of time
- b2) after step b1, increasing said delivery pressure continuously or in a plurality of steps.

21. A method according to one of the claims 19 or 20, wherein step b comprises the sub-steps of

- b3) initially providing a delivery static pressure to said inlet port which is less than a second threshold value
- b4) measuring the fluid flow rate of fluid flowing into said valve (10)
- b5) if said fluid flow rate is decreasing, then increasing the magnitude of said delivery static pressure ( $P_1$ ) in a predetermined or predeterminable manner

b6) continuing steps b4 and b5 until the measured fluid rate is zero.

22. A method according to one of the claims 19 to 21, wherein step b) comprises the further sub steps of

b7) measuring the static pressure at said inlet port (30)

b8) if said static pressure in said step is within a pre-determined third threshold value of the magnitude of the pressure of the container when full, discontinuing filling of container and disconnecting the valve from said fluid source

b9) if said static pressure in step b7 is less than a pre-determined third threshold value of the magnitude of the pressure of the container when full, discontinuing filling of container, releasing pressure in the valve upstream of the outlet port (40), resuming filling of container and continuing with steps b7) to b8).

23. A method according to one of the claims 19 to 22, wherein before and/or during the filling procedure, the weight of the container (500) is continuously measured.